

SUPPORT FOR THE AMENDMENTS

Claims 37-42 have been added.

Support for new Claims 37-42 is provided by original Claims 1-6, previously pending Claims 1-6 and 19-24, as well as the specification at, for example, page 3, lines 16-27 page 5, lines 15-17, and Examples 1 and 8-10.

No new matter has been entered by the present amendments.

REMARKS

Claims 1-42 are pending in the present application.

The rejection of Claims 1-36 under 35 U.S.C. §103(a) over Okawa et al (US 2002/0022062) is traversed.

In the outstanding Office Action, the Examiner alleges that the claimed invention is obvious since the present application discloses that the original coffee bean extract is the same as the coffee bean extract utilized in Okawa et al (i.e., “Flavor Holder” from T. Hasegawa Co., Ltd., Tokyo). Regardless of the original source of the coffee bean extract the critical limitation argued to date is the specific ratio of (b) a hydroxycarboxylic acid to (a) a chlorogenic acids family mixture comprising isochlorogenic acids wherein the weight ratio of said isochlorogenic acids is from 1/20 to 1/3 of the chlorogenic acids mixture. Okawa et al simply do not disclose or suggest this limitation or the criticality thereof. Indeed, the Declaration submitted on January 9, 2009, clearly illustrates the criticality of maintaining the (b) / (a) ratio of 5 to 15.

It is well-settled that the discovery of a problem can support patentability. *See Eibel Process Co. v. Minn. & Ont. Paper Co.*, 261 U.S. 45, 66 (1923) In the present application, it is clearly disclosed that “chlorogenic acids have a problem of producing bitterness or astringency when added to foods and drinks, especially beverages. Such bitterness or astringency is so severe particularly in beverages that those beverages are difficult to take in continuously.” (see page 1, line 28 to page 2, line 1) As set forth at page 5, lines 15 to page 6, line 3, the improvement in astringency or in bitterness brought by the flavor substance is directly impacted by the (b) / (a) ratio. Indeed, the results set forth in Tables 1-4 (pages 9-12) and in the Declaration under 37 C.F.R. §1.132 executed by Tatsuya Kusaura (“the Kusaura

Declaration”) submitted January 9, 2009, clearly support and illustrate the fact that the (b) / (a) ratio is a solution to this problem.

At no point is Ogawa et al at all concerned with the problem of astringency or bitterness. The discovery of a problem is often the key to making a patentable invention. Thus, the patentability of an invention under 35 U.S.C. §103 must be evaluated against the background of the highly developed and specific art to which it relates, and this background includes an understanding of those unsolved problems persisting in the art solved by the invention. *See, Eibel Process Co. v. Minnesota & Ontario Paper Co.*, 261 U.S. 45, 43 S.Ct. 322, 67 L.Ed. 523 (1923).

Second, the Examiner alleges that “it would have been obvious to one of ordinary skill in the art to expect the powdery food of Okawa to have the composition of the claims because it is made from the same ingredients.” This allegation is also misplaced as the claimed invention does not relate to a powdery food, but rather a beverage with a required water content (see limitation (c)). Further, even the powdery food disclosed by Okawa et al fails to meet the claimed (b) / (a) ratio. Specifically, Example 3 (referenced by the Examiner on page 4 of the Office Action) contains a total of 3% hydroxycarboxylic acid (2% citric acid and 1% vitamin C) and 3.6% of coffee bean extract resulting in a total of 1.01% chlorogenic acid. Thus, the ratio of (b) / (a) in the powdery food of Example 3 is approximately 3, which is below the claimed range of 5 to 15. The Table on page 5 of the Declaration clearly shows the criticality at the lower threshold limitation in column 1 (comparative example 6) and column 2 (example 7).

The Examiner also alleges that the argument that “unexpected improvement in taste when samples are prepared that maintains a specific ratio of hydroxycarboxylic acid to chlorogenic acids” is not persuasive “because there is no requirement in Okawa for high levels of vitamin C [to] be included. Examples 3 and 5 would be expected to have

substantially lower levels of hydroxycarboxylic acid.” Indeed, Okawa et al do not require that the vitamin C level be high, but Okawa et al do not provide any disclosure or suggestion either explicitly or implicitly as to the specifically claimed ratio of hydroxycarboxylic acid to chlorogenic acids, much less any reasonable expectation of the criticality of this ratio. It is only the present invention that provides the same. As for the allegations based on Examples 3 and 5, these allegations are misplaced as neither of these examples provides for a (b) / (a) ratio in the claimed range (in Example 3 (b) / (a) = 3, while there is no (b) in Example 5) nor do these examples contain the claimed amount of water. Accordingly, Examples 3 and 5 of Okawa et al are irrelevant to the claimed invention.

For the Examiner’s convenience, Applicants provide the following table summarizing the (b) / (a) ratios calculated for each of the Examples in Okawa et al:

Example	3	4	5	6	7	8	9	10	11
(b) / (a)	2.8	3.7	~ 0	1.9 (max.)	3.7	~ 0	19.8	4.8 (max.)	
Material	Powdery food	Tablet candy	Cup cake	Drink	Drink	Drink	Drink	Tablet	Soy sauce

Note: with respect to Examples 3-5, even if they are diluted, the (b) / (a) ratio would fall outside the scope of the claimed invention and the tastes would be equal to that of the comparative examples of the present application.

Applicants submit that, as set forth in the Kusaura Declaration, the fact that Okawa et al fail to disclose or suggest the claimed ratio of hydroxycarboxylic acid content to chlorogenic acids represents a critical defect in the disclosure of Okawa et al. To demonstrate the criticality of the claimed ratio range of 5 to 15, Applicants again refer to paragraphs 8-9 of the Kusaura Declaration, which demonstrate the criticality of the ratio of hydroxycarboxylic acid content to chlorogenic acid content within the range of 5 to 15.

Specifically, Table 2 in paragraph 9 of the Kusaura Declaration shows the following results obtained from the experiments reported in the Declaration:

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Experiment No.	1	2	3	4	5	6	7	8
corresponding to:	Com.Ex. 6 in the present application	Example 7 in the present application	Example 3 in the present application				Example 9 in Okawa	Com.Ex. 3 in the present application
(Material comprising chlorogenic acid)	360 mg (*5)		235 mg (*5)	235 mg (*5)	475 mg (*5)	235 mg (*5)	360 mg (*5)	375 mg (*5)
Isochlorogenic acids	15 mg	20 mg	10 mg	10 mg	19 mg	10 mg	14 mg	8 mg
(a) Total chlorogenic acids	105 mg	140 mg	70 mg	70 mg	133 mg	70 mg	101 mg	52 mg
Isochlorogenic acids content ratio	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/7
Citric acid	300 mg	250 mg	350 mg	350 mg	-	350 mg	-	2000 mg
Malic acid	-	100 mg	100 mg	350 mg	-	686 mg	-	-
Sodium citrate	20 mg	450 mg	350 mg	350 mg	-	350 mg	-	-
Vitamin C (ascorbic acid)	30 mg	-	-	-	2000 mg	-	2000 mg	-
(b) Total hydroxycarboxylic acid	350 mg	800 mg	800 mg	1050 mg	2000 mg	1386 mg	2000 mg	2000 mg
(b)(a)	3.3	5.3	11.4	15	15	18.6	19.3	38.5
(c) water	97.69 g	96.23 g	97.365 g	97.365 g	50 g in total	97.365 g	50 g in total	91.625 g
Apple juice (*2)	-	-	-	-	-	-	-	4.4 g
Fructose-glucose (*4)	1.5 g	1.5 g	1.5 g	1.5 g	-	1.5 g	-	1.5 g
Sucrose	-	-	-	-	11 g	-	11 g	-
Perfume	0.1 g	0.1 g	0.1 g	0.1 g	-	0.1 g	-	0.1 g
pH	3.0	4.5	3.8	3.4	3.0	3.2	3.0	1.5
Brix	1.47	1.55	1.38	1.50	24.3	1.68	24.0	3.59
<Evaluation >								
Taste	3	1	0	0	0	2	2	3
Astringency	1	0	0	0	0	2	2	3
Bitterness	2	0	0	0	0	1	0	1
Foreign taste	3	1	0	0	0	0	0	0
Dreg formation	1	1	1	1	1	1	1	1
Storage stability (*5)	2	1	1	1	1	1	1	2

*2 Aomori Apple Juice, 5-fold condensed (malic acid content 2.5%)

*4 Joint Association of Agricultural Cooperatives of Ehime

*5 Raw coffee beans extract

*8 Evaluation after storage for 7days at 60 °C

Rating of Taste, astringency, bitterness, and foreign taste :

4 : felt very strongly
3 : felt strongly
2 : felt
1 : slightly felt
0 : not felt at all

Rating of Dreg formation :

3 : observed definitely
2 : observed a little
1 : no dreg was observed

Rating of Storage stability :

3 : color darkened
2 : color slightly darkened
1 : color not changed

On the basis of the results demonstrated in paragraph 9 of the Kusaura Declaration, the declarant concluded:

10. The data above clearly illustrates the criticality of the ratio of hydroxycarboxylic acid content to chlorogenic acid content within the range of 5 to 15. Specifically, the data above demonstrate that when the weight content of the ingredient (b) was higher than 15 times the weight of the ingredient (a) (experiment numbers 6-8), the beverage resulted in an overly acid flavor, rendering the beverage unfit for long-lasting drinking. When the weight content of hydroxycarboxylic acids (of ingredient (b)) was lower than 5 times the weight of the ingredient (a) (experiment number 1), the beverage exhibited astringency, bitterness or foreign taste. The criticality of the ratio of hydroxycarboxylic acid content to chlorogenic acid content within the range of 5 to 15 is *unexpected*.

Applicants submit that disclosure and examples of Okawa et al fail to disclose or suggest the presence of a hydroxycarboxylic acid in a quantity ranging from 5 to 15 times the weight content of ingredient (a). The Examiner is reminded that Applicants can rebut a *prima facie* case of obviousness based on overlapping ranges by showing the criticality of the claimed range. "The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims... In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Applicants submit that this burden has been met by the submission of the Kusaura Declaration.

Applicants again submit that the criticality of the lower threshold limit of 5 is clearly demonstrated by referring to Experiment Nos. 1 and 2 (Comparative Example 6 and Example 7, respectively, as illustrated in Table 2 (page 10) and Table 1 (page 9) of the specification). Experiment Nos. 1 and 2 demonstrate that when the (b)/(a) ratio is below the claimed threshold of 5, the resulting beverage is worse in almost every measured evaluation, including a poorer taste, astringency, bitterness, foreign taste, and storage stability. Even though these data clearly support the criticality of the lower threshold of 5, Applicants have

also presented new claims in which the lower threshold is defined as being 5.7 or 8.71. The criticality of these lower thresholds and the fact that the best scores for taste and dreg formation are obtained with the ranges defined by these lower thresholds up to a (b) / (a) ratio of 15 are clearly illustrated in Tables 1-4 on pages 9-12 of the specification.

With respect to the upper threshold limit of 15, reference is made to Experiment Nos. 3-8 of the Kusaura Declaration. Immediately evident from Experiment Nos. 3-5 (all meeting the required (b)/(a) ratio limits) as compared to Experiment Nos. 6-8 (all exceeding the (b)/(a) limit of 15) when the weight content of the ingredient (b) was higher than 15 times the weight of the ingredient (a) (experiment numbers 6-8), the beverage resulted in an overly acid flavor, rendering the beverage unfit for long-lasting drinking.

In view of the foregoing, Applicants submit that Okawa et al do not render the presently claimed invention obvious.

Applicants submit that the present application is now in condition for allowance.
Early notification of such action is earnestly solicited.

Respectfully submitted,

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